ABSTRACT

A filtered cathodic-arc plasma source of lower plasma losses and higher output plasma current to input current efficiency is disclosed. Plasma filtering is accomplished in a right angle bend magnetic filter arranged to include the effects of at least three added magnetic coils located at the right angle bend of the filter path. These magnetic coils and other filter attributes, including an array of transverse fins and a magnetic cusp trap in the filter path, achieve desirable magnetic flux paths, lower plasma collision losses and reduced undesired particle output from the plasma filter. Multiple cathode sources, multiple plasma output ports, Larmour radius influence, equipotential magnetic flux lines and electron/ion interaction considerations are also included in the plasma source. Application of the plasma source to film coating processes is included.